



SWARN BHASM IS A TRADITIONAL AYURVEDIC MEDICINE, SYNTHESIS, CHARACTERIZATION AND USES OF SWARN BHASM AS A NANOPARTICLES

Yogendra Singh

ABSTRACT

Nanotechnology is an emerging technology which involve advance study of particles having size between 1 to 100 nm. In Indian continents an advanced medical science exists from a very long-time 7th century AD. During ayurvedic treatment mostly bhasm was used, these were prepared reducing by particle size by calcination process. In calcination process pure metal that are zero valent changed into multi- valent. in this study gold bhasm was prepared and particle size was studied by using XRD, FTIR, UV-VIS and SEM spectra and confirmed by laser particle size distribution, and it has found it was 10 nm. elemental analysis of bhasm (ash) was done by atomic absorption spectrophotometer for the determination of gold purity. During study the size of gold particles was 45 nm and purity of gold was 99 %.

KEYWORDS: Bhasm, Gold Nanoparticle, Particle Size, Elemental Analysis

1. INTRODUCTION

Nanotechnology is an emerging technology includes study of particles having size between 1 to 100 nm,(1) due to their small size and larger surface area, they confer specific physiochemical properties as strength, (2) electrical (3) and optical feature (4). These particles play a vital role in the field of electronic, (5) biomedical, (6) pharmaceuticals,(7) cosmetics, (8)energy,(9) environmental,(10) catalysis,(11) and materials science (12). In this study Bhasma literally meaning ash is unique ayurvedic Herbo-mineral-metallic compounds in the size of Nano dimensions between 5-50 nm (13). Bhasmikaran is the process where bhasm process of these bhasma in ayurveda is known as bhasmikaran (14) . actually by the modern science definition it is a process conversion of zero valent state of metal into higher oxidation states which eliminates the toxic nature of metals with high medicinal value (15). Bhasma are organometallic and organomineral complexes as they are integrated with biological molecules which is useful to improved stability, functionality, absorption, assimilation, bioavailability, targeted delivery of ingredient and effectiveness. Swarna Bhasma (also called Monatomic Gold, Gold Bhasma, Swarn Bhasm & Suvarna Bhasma) is an ayurvedic medicine used for increasing non-specific immunity and in the treatment of a wide range of diseases. It also acts as an adjuvant for various medicines and herbs and boosts their actions and increases their efficacy. According to Ayurveda, it is a good nervine tonic and improves overall health. It increases lifespan, intelligence, memory, skin glow and prevents several diseases. In addition, it increases strength and endurance and improves mental as well as physical performance.

2. EXPERIMENTAL

2.1. Materials and methods

2.1.1. Gold in pure form can be externally used to make jewellery but it cannot used internally, because in pure state it is very toxic for health, therefore it must be purified means sodhan is required. To make it health

2.1.2. Purification (Sodhan) of gold: Thin layer of 1gm gold + put into glass pot (surrounded by clay) + glass pot included gold keep on heating +add salt and continue until gold completely melt+ keep on heating +add some quantity of water +heat+ oxalic Acid +heat until gold particles settle down, now gently wash with water and remove acidity, obtained particles are the purified gold.

2.1.3. Preparation of gold bhasam:

Take purified metal of step 2.1.1.1 add double quantity of mercury then thin grind, and citrus juice in this continuously for 3 day, and then mix sulphur in same amount of this +don't expose in air +add 3 Bhavna swaras of Kaachnaar , obtained bhasm is violet colour.

3. PHYSICAL AND ELEMENTAL ANALYSIS

There are 3 parameters were determined during physical analysis viz. Moisture, loss on ignition, Acid insoluble ash (AIA) by using physical method, elemental analysis was done by gravimetric Method. (R), Trace element was analysed by Atomic Absorption Spectrophotometer AAS. the details of trace elements are as under

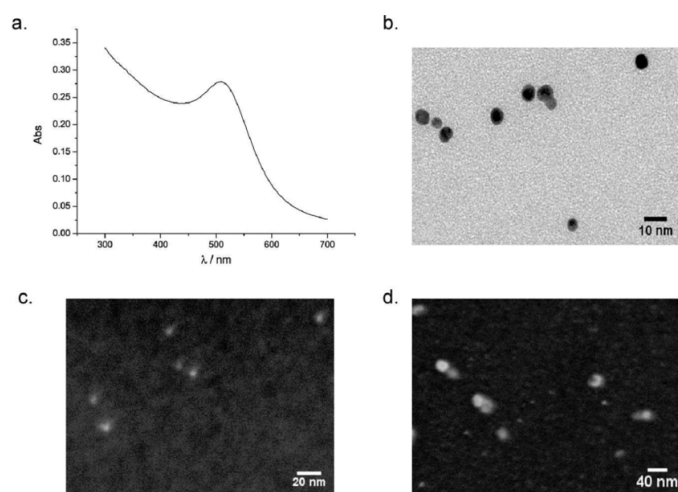
S.N.	Sample	Ag (%)	Fe(%)	Pb (%)	Cu (%)	Hg(%)	Zn(%)
1	Swarn Bhasam	0.05	0.17	0.004	0.02	0.001	0.020

4. CHARACTERISATION OF SYNTHESISED GOLD BHASAM

4.1 U.V-VIS Spectroscopy And Sem Analysis: UV-Visible spectra of these nanoparticle was studied with the help of Spectrophotometer (spectronic 20), the maximum absorption was obtained 505 nm.

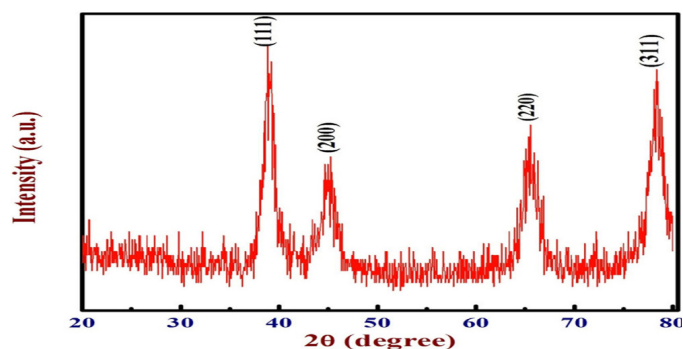
Sem Analysis: A scanning electron microscope (SEM) is the microscope where images is obtained of a sample by scanning it with a focused beam of electrons. Images show that particles

range from 10-40 nm size and showed tiny particle type structure for nanoparticles.

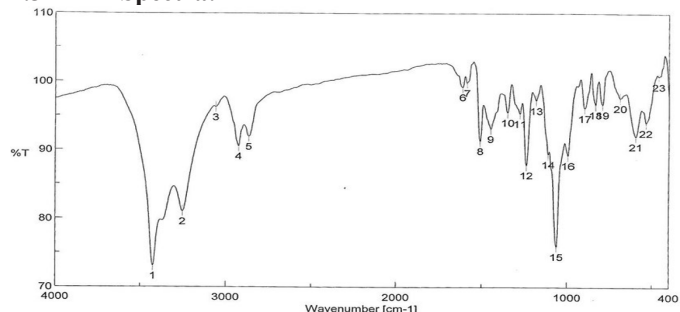


4.2 XRD Analysis: four characteristic peaks were obtained at 38.206° , 46.155° , 66.607° , 78.918° ,

Particle size was calculated from Debye-Scherrer equation given by: $D_p = 0.94\lambda / \beta \cos\theta$ Where, D_p = Particle size (in nm), β = Line broadening (in degrees), θ = Bragg angle (in degrees), λ = X-ray wavelength (in nm), The particle size obtained was 10.00 nm.



4.3 FTIR Spectra:



The Fourier Transform Infrared spectroscopy (FTIR) graph shows a broad region 3415 cm^{-1} and is called a stretching peak a sharp peak at 1634.3 cm^{-1} is called bending peak which is and coordinated water $\delta(\text{HOH})$. The peaks at 610 and 1255.7 cm^{-1} .

5. CONCLUSIONS

Gold nanoparticles are being used from ancient time in India

which is synthesised by calcination process. The synthesized bhasm was analysed by XRD, SEM, FTIR and the size of bhasm after calculation was 10 nm i.e. nano in sized. it is obvious from elemental analysis made by atomic absorption spectrophotometer (AAS) the bhasm consists gold as its single and major elements being approx. approx. 99 % pure gold. Sawarn bhasm works as a very important tonic as well as medicine.

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